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PLANS AND SUGGESTIONS  
for  
New Mexico Rural School Buildings

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Issued by the State Department of Education, Santa Fe, New Mexico  
Jonathan H. Wagner, State Superintendent of Public Instruction

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"We have two great branches of architectural virtue, and we require of any building:—

1. That it ACT WELL, and do the things it was intended to do in the best way.
2. That it LOOK WELL, and please us by its presence, whatever it has to do."

"All works of quality must bear a price in proportion to the skill, time, expense, and risk attending their invention and manufacture. Those things called dear are, when justly estimated, the cheapest. A composition for cheapness and not for excellence of workmanship is the most frequent and certain cause of the rapid decay and entire destruction of art and manufacture."

—John Ruskin.

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SENA HIGH SCHOOL AT SANTA FE—MISSION TYPE OF ARCHITECTURE  
POPULAR IN NEW MEXICO

## INTRODUCTION.

THERE IS LITTLE that needs to be said by way of introduction to these plans and suggestions for New Mexico Public School Buildings. One of the most valuable publications ever sent out from the Department of Education was one similar to this one issued by the Territorial Department of Education under the direction of the Territorial Superintendent, Mr. James E. Clark, in 1909. During my administration from time to time, many calls have been made for these designs and suggestions by school officials and architects, and we have been able to accommodate many. That supply is now exhausted and to meet the continually increasing demand for plans and suggestions of sanitary, convenient, and artistic school buildings this publication is sent out from the Department of Education with confidence that it will result in better school buildings in our state.

In the preparation of this book, we have consulted not only similar publications from the educational departments of the various states in the Union, but we have conferred with close observing practical school men and architects in order that this book may be of real service. Much of the subject matter has been prepared under the direction of Teachers' College, Columbia University, in the Department of Rural School Administration, and we have embodied the rules governing the sanitation of public buildings as promulgated by the State Board of Health in New Mexico. I am indebted to many sources for the suggestions, the material in plans and suggestions and the drawings and designs in this book, but more especially to the members of the Department of Education, who realizing the demand for this book have given their best efforts.

Santa Fe, New Mexico, June 1st, 1920.

JONATHAN H. WAGNER,  
State Superintendent of Public Instruction.

## BUILDING STANDARDS FOR RURAL SCHOOLS.

### I. The School Grounds.

Beautiful, well kept school grounds are an indication of a progressive community; and money invested in school property brings returns in enhanced farm values, and in a happier, richer life for children as well as adults.

The schoolhouse should be located on the best plot of ground to be secured in the district provided it isn't too far from the center of the community and has the advantage of the best roads. The fact that the district already has a site is no reason why it should not be changed if a better one is obtainable.

The grounds, which should contain at least two acres, must be well drained, must contain water supply if possible; and should provide for school gardening if older children are expected to attend school. Hence a rocky, wind-swept bit of land which is of no use for anything else will not be a satisfactory school location. Care must also be taken in the mountainous sections lest hillsides or trees shut out the light supply.

Beautifying the school grounds by means of trees and shrubbery seems a hopeless task in many parts of the state but even sage brush and cactus can be utilized for hedges. Walks can be made about the building and the premises kept neat if nothing more is done.

The building should be far enough away from the road to avoid the dust and noise from passing vehicles. Many communities will provided a teachers' home and a shed for horses, if they have not already done so, and the general plan of the school ground should make allowance for convenient arrangement of these features.

The grounds should be entirely enclosed by a fence, a practical one being made with several strands of barbed wire or with a strip of hog wire topped with two strands of barbed wire. If the posts are painted white the fence will look well and be more durable.

One of the most important features of any school is its playground. We have changed the old idea of providing separate playgrounds for boys and girls for several reasons. Girls and boys must study together, compete with each other for school honors, go to and from school together and they are associated with one another in the homes. Then why should they be partitioned off on the playground where there is excellent opportunity for the development of team work, respect for one another's rights, and wholesome, natural relationships between boys and girls? This latter factor is too often sadly neglected as countless errors in later youth give evidence.

There is practically no difference in the play interests of school boys and girls, age being the important factor which determines variation in play. There should be a large, general playground so planned that a baseball diamond and a basket ball court can be laid out. A place is reserved for the smaller children and is provided with a sand pile and some small wooden boxes for building playhouses, besides such equipment as a giant stride and a slide. The older children may provide other play equipment for the little ones.

## II. The Building.

No school building should be hastily planned for in most cases it must serve a good many years and is likely to become quite inadequate for the community's needs. There are many places in New Mexico where consolidation will never be possible largely because of geographical conditions and sparseness of population. This means that one or two teachers will have charge of all grades in school. It should not mean however that the children in such a community be deprived of school advantages which children in more favorable localities enjoy.

Any school building is primarily **for children**—a place where they may work and play, and learn and live. Building plans should make provision for the teaching of industrial arts, usually by the regular teacher; for a library that all the children may from the habit of enlarging their experiences through reading; for assemblies of all the children in school and for ultimate growth of attendance.

Whether a basement is provided or not, a good foundation is essential especially since winds are so strong in most sections of the state. The general durability of any structure should be referred to an architect.

Each school will have different needs in such matters as size of library, amount of blackboard and so forth, but no school should neglect such conveniences as built-in cupboards, ample oak room space, place for dinner boxes, and bulletin boards. The coat rooms are especially convenient when provided with a separate compartment for each child.

In buildings with four or less teachers the rooms should all be on the ground floor except that an assembly hall and fuel and furnace rooms are provided in the basement. Separate work room for boys and girls in the basement are inadvisable because of inadequate supervision. For the same reason separate basement playrooms for boys and girls are inadvisable. In most parts of the state any inside playroom is unnecessary for children are able to play outside practically all the time.

The classrooms should provide eighteen square feet of floor space for each child, should be twelve feet high and not more than twice as wide as high.

## III. Ventilation and Heating.

In rural schools the heating and ventilating systems are one hence when no fire is needed window ventilation must be substituted for the gravity system. To secure proper heat and ventilation in winter the jacketed heater is the most economical and simple in construction. The heated air which is admitted from the outside expands and rises so that factor alone will cause circulation in the school room. But in order that the heavy foul air may be removed, an outlet near the floor admits this air into a flue which is built beside or around the smoke chimney. Since this foul air is caused to rise by being heated from the smoke chimney it is necessary to have a thin partition between the two.

## IV. Lighting.

The window space in the classrooms should be on the left side only of the pupils and should equal from one-fifth to one-fourth of the floor space. Windows in the back of the room are unnecessary and they inconvenience the teacher who must face them. The windows should extend to within at least six inches of the ceiling to three and one-half feet from the floor, to the back of the room and to within about seven feet of the front of the room. This last distance depends upon the placing of the seats; as a rule the window farthest front will not be ahead of the front desk, thus avoiding, as much as possible, light in the faces of the children. If the width of a schoolroom is more than twice its height the desks farthest from the window will be

inadequately lighted. No room will be properly lighted if the upper half of the window is continually covered by a shade. Shades need be used only to keep out direct rays of sunlight and since the folding, adjustable shades are so easily managed no school-room need be dimly lighted if the windows face east or west. If southern exposure is unavoidable shades which permit a diffused light are desirable.

The tinting of the walls makes considerable difference in the brightness of a room. Experts have decided that the best decoration is light brown for the lower part of the room, light buff for the walls, and a light cream color for the ceiling. The furniture and wood work should be of light colored wood and should never be highly polished.

The location of windows in other than classrooms is not important, the main essential being that there are plenty of them for the admission of sunshine.

## **V. Equipment and its Arrangement.**

All equipment from blackboards to library tables should be furnished for the small as well as the larger children. Too often all the blackboards are beyond the reach of the little ones, there is no little reading table in the library which they may claim, nor are there any other provisions made especially for their comfort.



## PRINCIPLES IN SCHOOL HOUSE CONSTRUCTION.

### I. Foundation.

1. Necessary to have one which is firm, to avoid sagging of building or racking it in strong winds. It also helps in keeping dry and warm.
2. Where no basement is finished off 18 inches to 2 feet is sufficient height. With a basement it should be at least 3 feet above ground line. Additional light may be given to basement rooms by terracing the ground.

### II. General plans:

1. Consider:
  - a. Number of teachers, grades, and children.
  - b. Use by community (children first).
  - c. General durability.
2. Convenience and hygienic principles should never be sacrificed for architectural symmetry and fanciful plans.
  - a. Long eaves over windows exclude light and cast shadows.
3. Plans should include provision for such conveniences as built-in cupboards, book cases.
4. Room should be no more than 12 feet high or more than 24 feet wide.

### III. Ventilation.

1. Provision should be made for admission of warm fresh air and extraction of foul air—both entrance and exit to be on same side of room, fresh air 6 or 7 feet from floor, foul air near floor.
2. In New Mexico the heater (if a jacketed stove is used) is best placed on the west side of the building because the winds are so often from that direction.
3. Where possible a furnace should be installed for all except perhaps the one-room building.

### IV. Lighting.

1. Light in the class rooms should come from the left side only.
2. Windows placed thus:
  - a.  $3\frac{1}{2}$  feet to 4 feet from floor.
  - b. As near ceiling as possible.
  - c. Five to seven feet from front of room.
  - d. Banked as closely together as possible.
3. Window space equal to one-fifth to one-fourth of floor space.
4. Glass doors in rooms to light hallways permissible.
5. Windows built in wall of one room to light another good.

## V. Equipment.

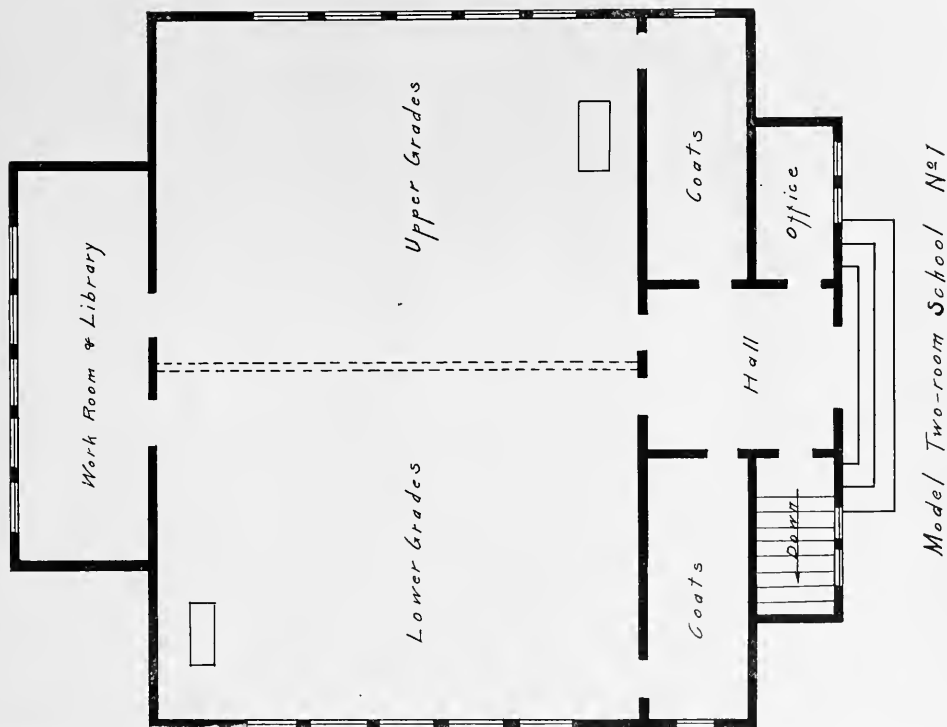
1. Blackboard in front of the room is essential in all classrooms. It should extend all the way across the room in a rural school because of the extended use to be made of it. The board at the side, between the windows and the front wall, should be 28 inches wide or maybe width of other in the room and a chalk rail ~~but~~**24-26 inches from floor—** this to be for use of small children. Space above this board for posters, etc. The board on the opposite side of the room may correspond to this. Then the board in the front and back of the room may be regular height from floor.

## VI. Coat Rooms.

1. Lighted, ventilated and large enough for winter wraps.
2. Hooks adjusted to accommodate small and large pupils.

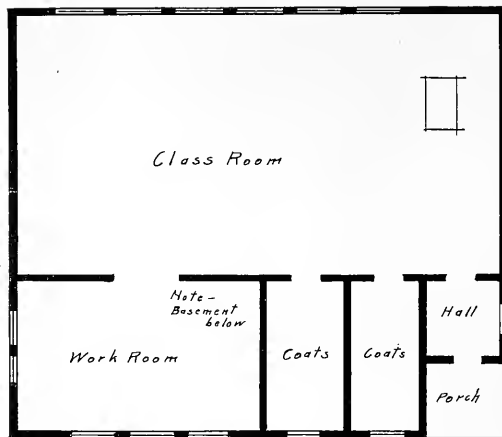
## VII. Miscellaneous.

1. Doors from rooms should open **into** corridors.
2. Light into a class room comes from these directions, in order of desirability.
  - a. Southeast, southwest, west, south, east.
3. In cold climate walls may be made double with air space between; and with water proof paper between for the outer walls.
4. Basement rooms which are used for classes or meetings of any sort should not be more than 3 feet below ground level.
5. Eighteen square feet of floor space per pupil minimum for class room.
6. No thresholds in the building.
7. An auditorium should be provided where possible—if furnace is placed at one end then there would be room in the basement for a large room in the schools of three- and four-teacher type.
8. Separate playground for boys and girls undesirable, except that some schools may provide athletic field; even this is not to be forbidden to the girls.



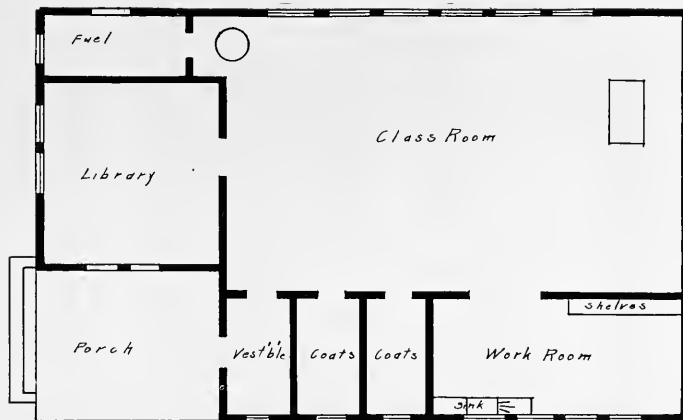
**MODEL TWO ROOM SCHOOL No. 1.**—A general playground and toilets in the basement; if no basement is made then plan can be made for heaters in the room.

Size of rooms, inside measurement, 24x32; work room and library 10x24; partition between the two rooms to be folding or rolling or a solid wall. Building to face north and south.



*Model One-room School No. 1*

MODEL ONE ROOM SCHOOL No. 1.—Size of class room 22x34, inside measurement; work room 12x18; girls and boys' coat rooms 5x12; hall 6x6; porch covered by roof and cabinets may be provided under the windows for books.



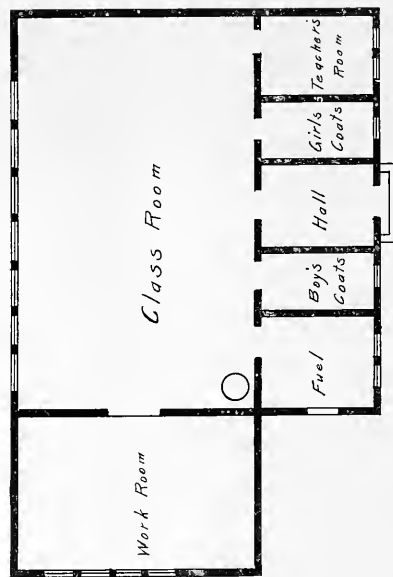
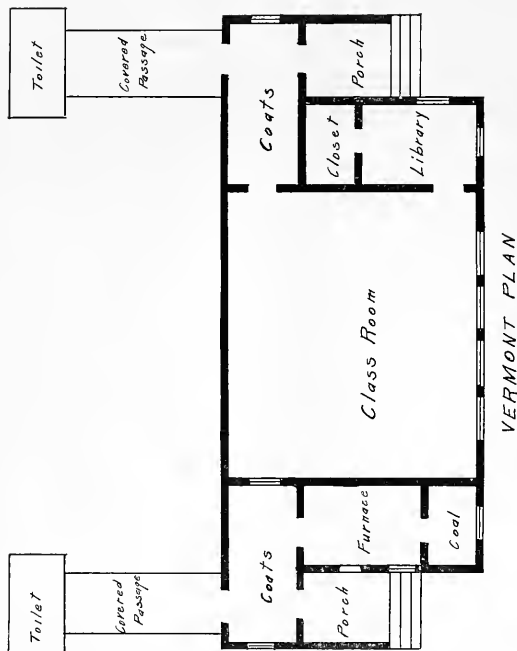
*Model one-teacher school No. 2*

**MODEL ONE TEACHER SCHOOL No. 2.**—Class room inside measurement 22x32; work room 10x20; girls' and boys' coat rooms and vestibule 4x10; porch 8x10; library 8x16. Under the windows small shelves may be placed for plants and under this a case for small children's favorite books. Building faces north and south.

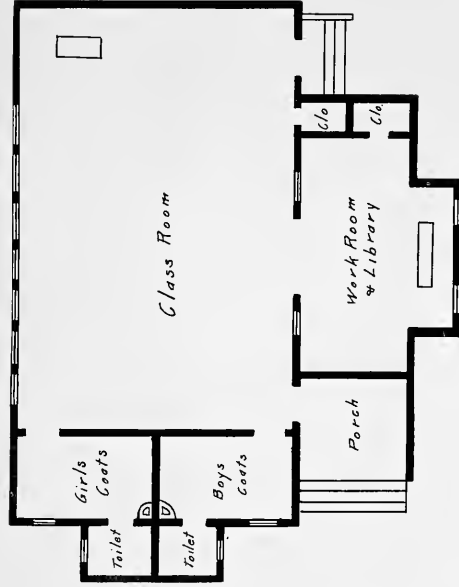
This plan is made with consideration for the convenience of both teacher and pupils, for comfort, for happy, profitable time spent at school, and for the use by the community. Since the school house must be built, why not have it built so that the maximum use may be made of it? It costs a little more at the outset but the returns in desirable influence on the children and community are immeasurable. The porch adds to the hominess and beauty of the building and provides shelter for those who may arrive before the door is unlocked. The vestibule, as Territorial Supt. J. E. Clark wrote in 1909, "has its advantages at all times and in a windy country especially is almost indispensable. Otherwise the wind would get a full sweep into the building whenever the outside door was opened."

Some of the equipment, as the shelf under the windows, might be added later by the older boys; but most of it should be put in when the school house is built, then it is sure to be there and to be well constructed.

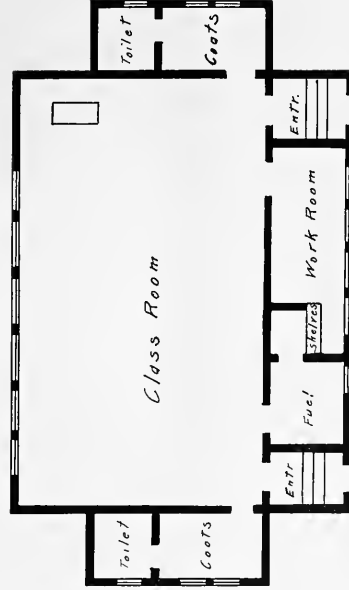
If there is a basement, and this is recommended for the colder districts of the state, the fuel room will serve as an entrance, and the hot air flue can be put near the chimney, perhaps as indicated by dotted line in ink. The advantage of having the foul air enter a flue beside the smoke chimney is that the heat accelerates its removal.



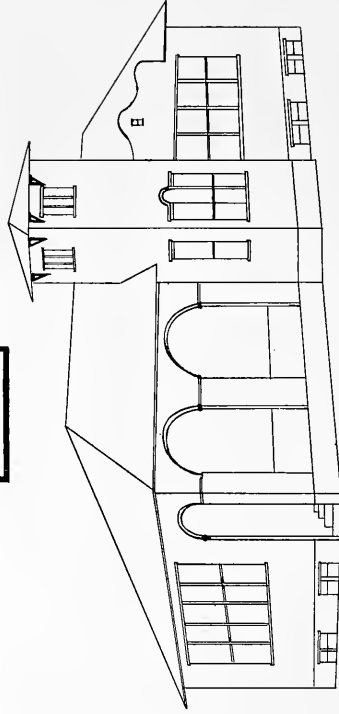
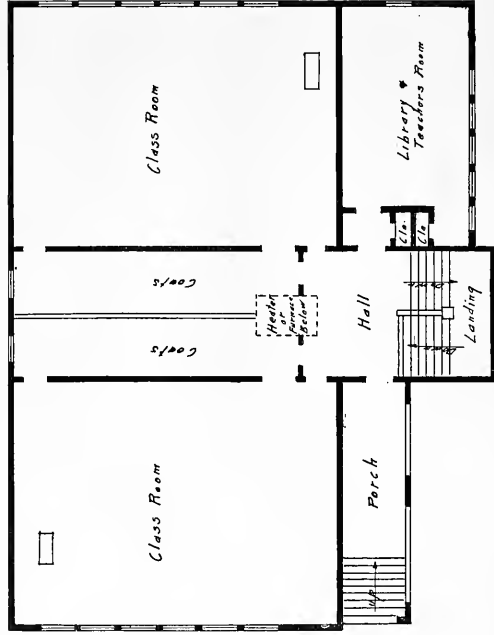
PLANS FOR REMODELING OLD BUILDING.—Class room inside measurement 32x22; work room 22x12; fuel room 8x8; boys' and girls' coat rooms 5x8; hall 6x8; teachers' room and supplies 8x8.



KANSAS PLAN

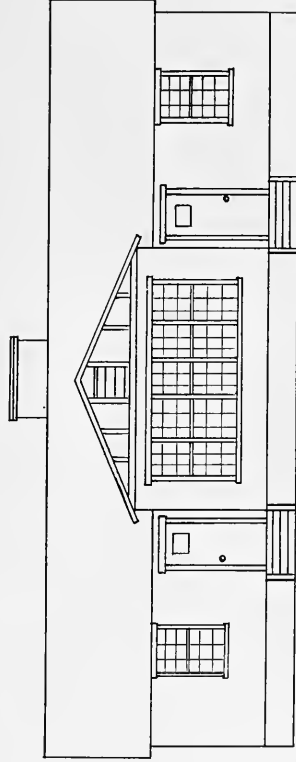
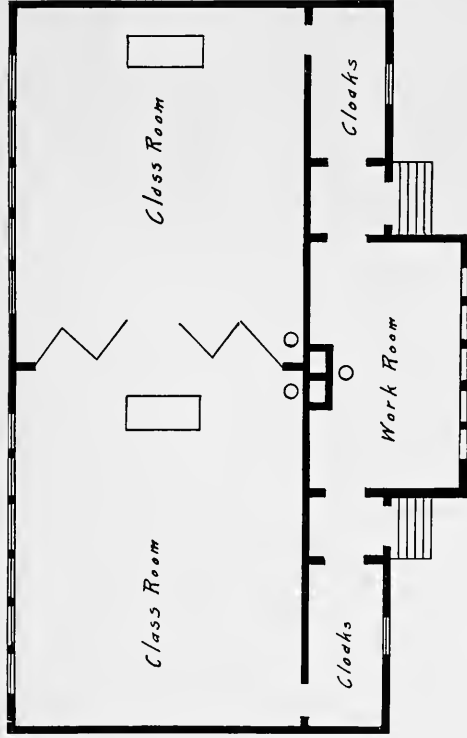


MICHIGAN PLAN

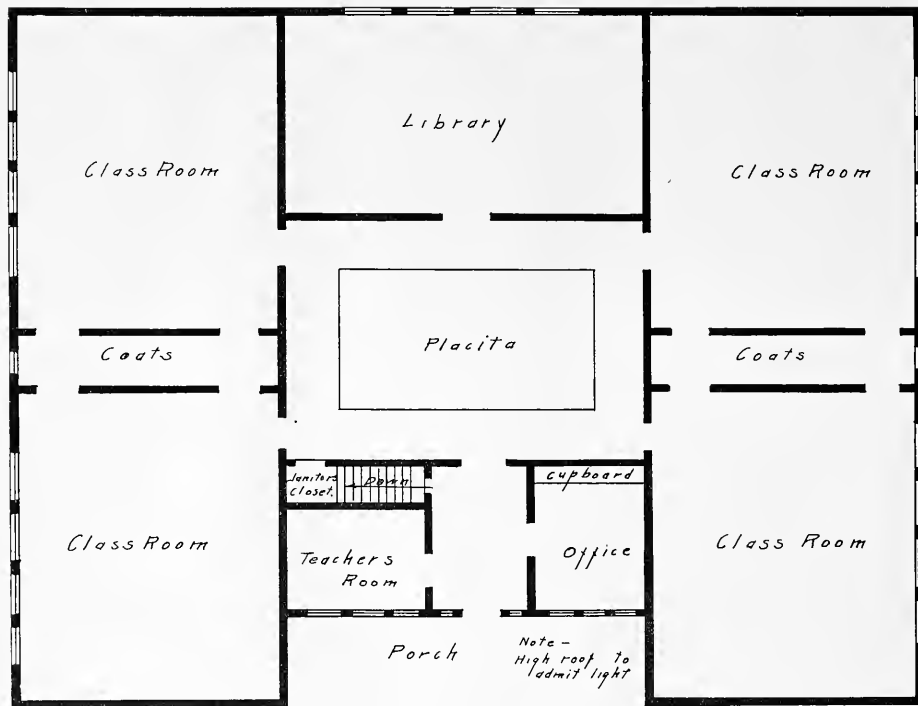


WISCONSIN PLAN



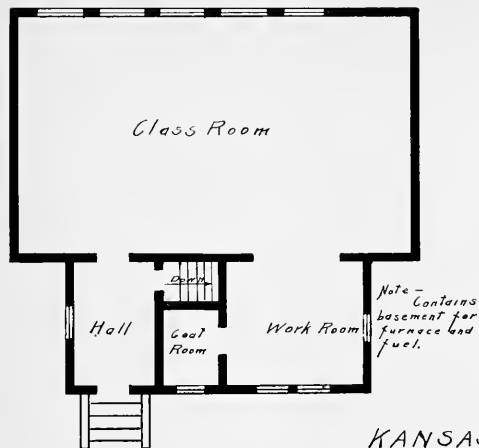


ALABAMA PLAN

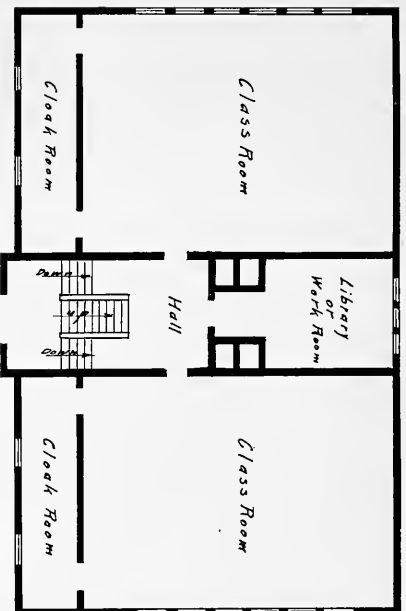


### MODEL PLAN FOR FOUR-ROOM SCHOOL

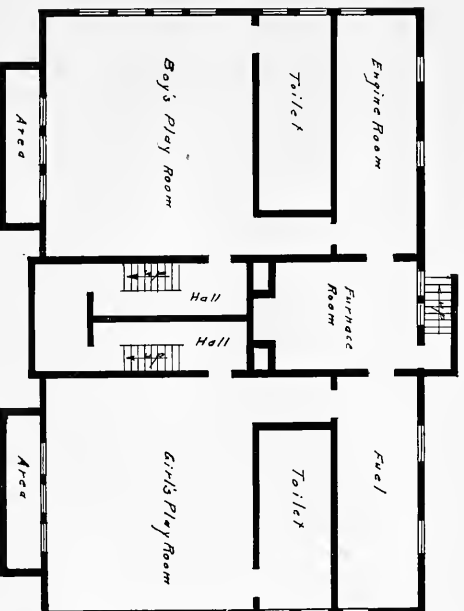
MODEL PLAN FOR FOUR ROOM SCHOOL.—Size of class rooms 22x31; coat rooms 3x23; library 14x28; teachers' room 19x11; office 14x11; placita 16x16; porch built high as rooms to give plenty of light to the rooms. This building is heated by a furnace. Basement plan not given. School Building standards are observed in this floor plan.



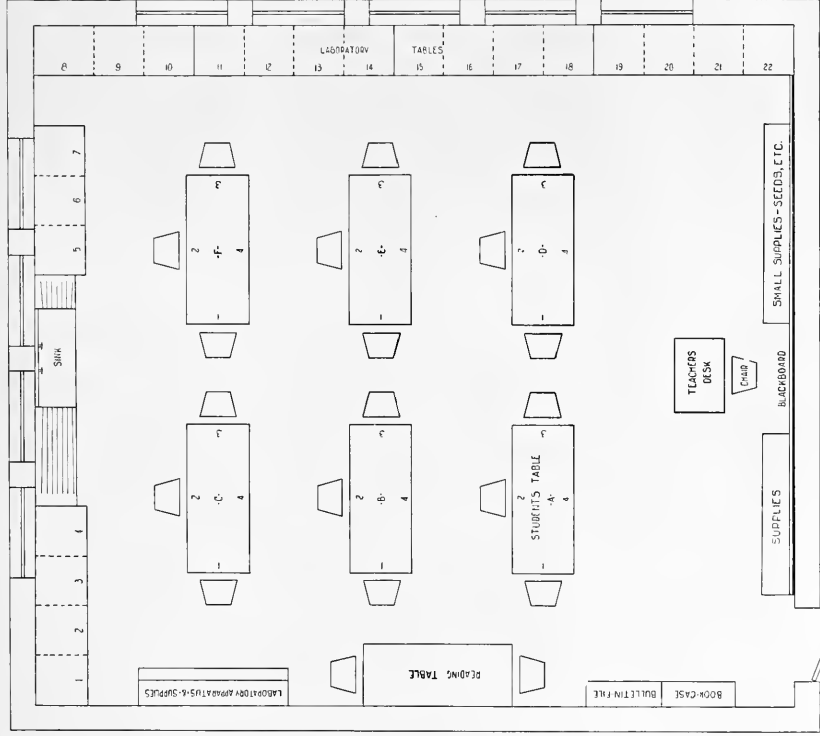
KANSAS PLAN



FIRST FLOOR  
MINNESOTA PLAN



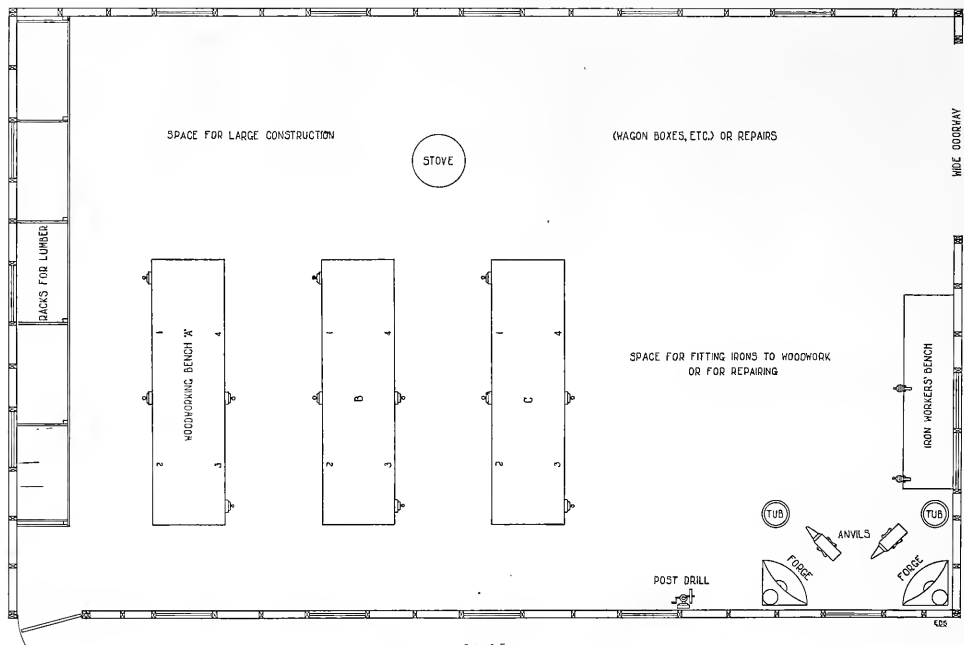
BASEMENT PLAN



Scale of Feet  
0 1 2 3 4 5 6 7 8 9 10

PLAN OF COMBINATION-RECITATION AND LABORATORY ROOM FOR VOCATIONAL AGRICULTURE  
PLANNED FOR 20 STUDENTS  
ROOM 27'-6" X 30'-6"



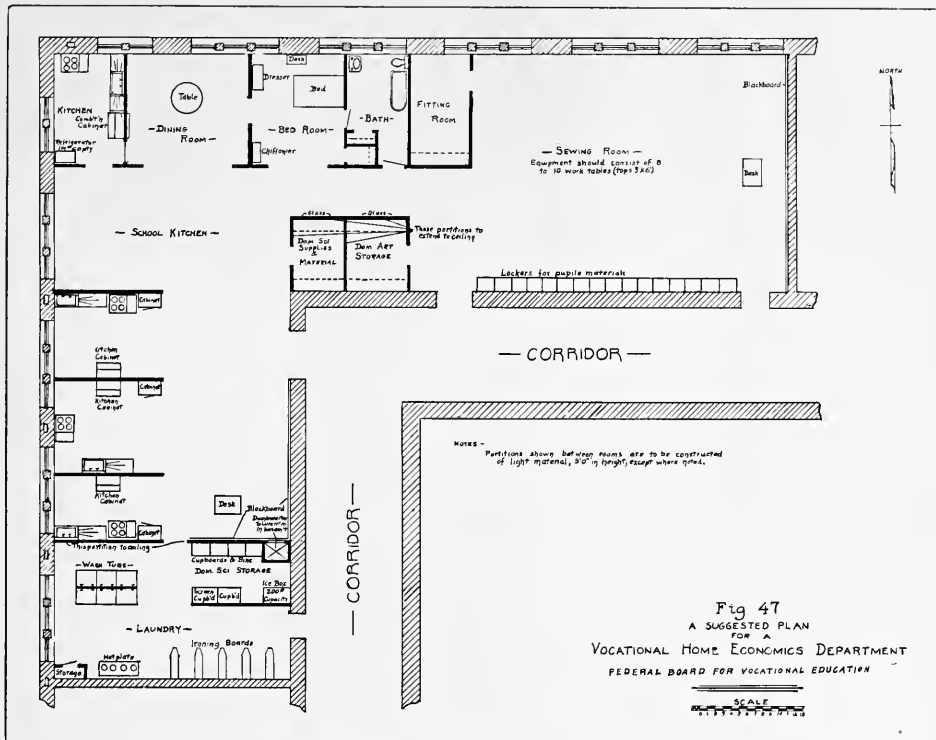


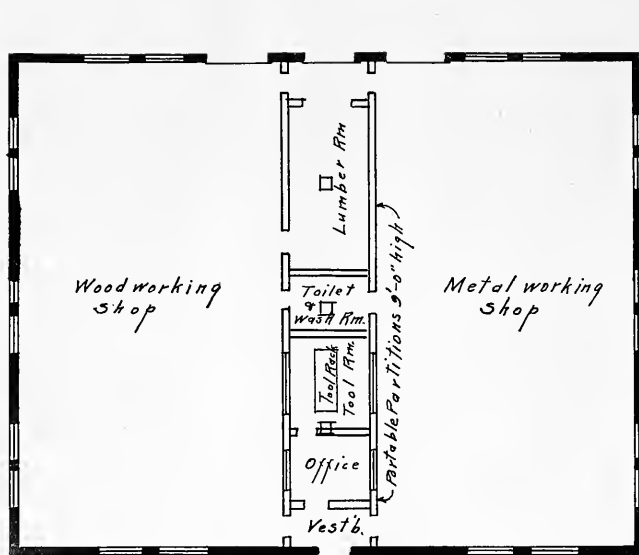
Scale of Feet.

PLAN OF FARM SHOP, INCLUDING IRON WORKING

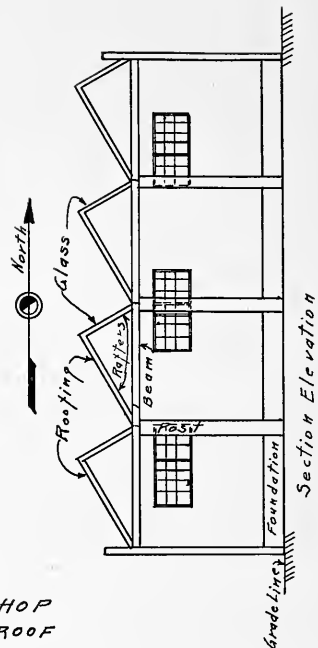
PLANNED FOR 12 TO 20 STUDENTS

ROOM 24'-6" X 38'-6"



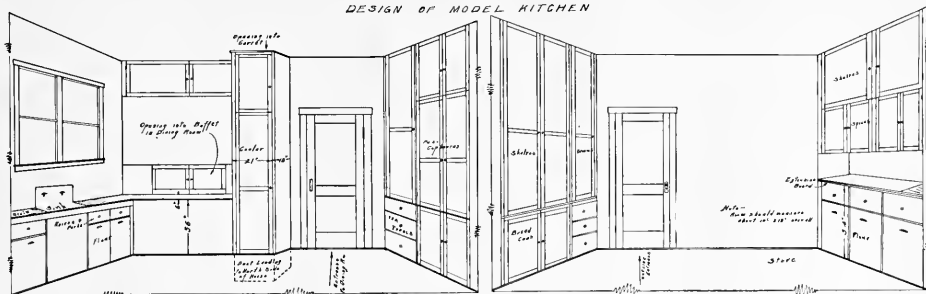


MODEL MANUAL TRAINING SHOP  
WITH STANDARD "SAW-TOOTH" ROOF



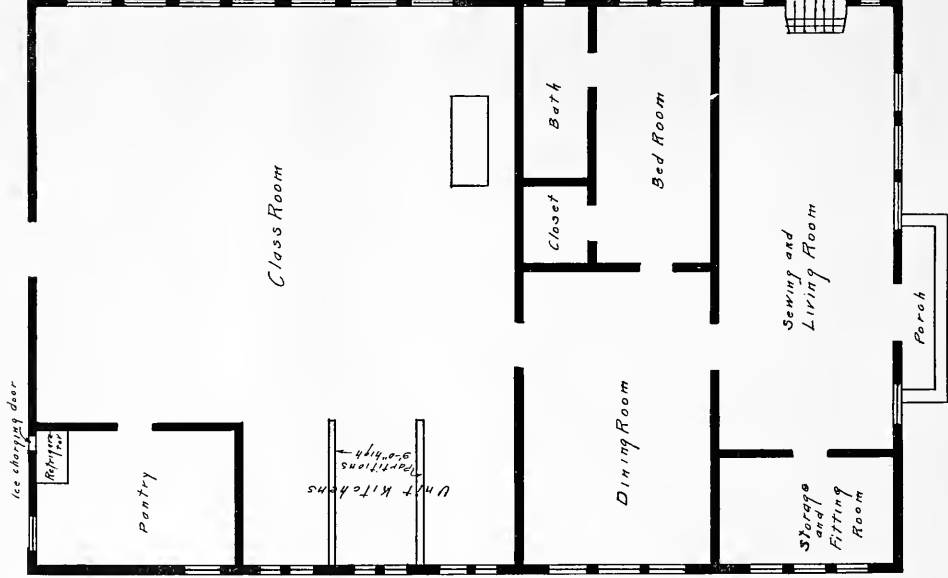


PERSPECTIVE  
DESIGN OF MODEL KITCHEN



Design taken from a real home kitchen in New Mexico.

SANTA FE, NEW MEXICO  
MAY 24, 1924  
HBS



Layout for Home Economics Cottage

# REGULATIONS GOVERNING THE SANITATION OF PUBLIC SCHOOL BUILDINGS.

Promulgated by the State Board of Health of New Mexico

April 30, 1920.

Section 1.—**Drainage.**—All public school buildings and grounds shall be located on well drained sites. If the natural drainage is insufficient, adequate artificial drainage shall be provided sufficient to insure freedom from dampness of buildings and grounds.

Sec. 2.—**Sanitary Construction.**—All public school buildings shall be so constructed as to conform to the following sanitary requirements:

- a. All buildings shall be weather tight, free from crevices in the floors or walls and from leaks in roofs.
- b. All buildings shall be as nearly fire-proof as possible, and if of more than one story shall be provided with at least one fire escape for each corridor or hall above the ground floor. All future construction shall provide at least one fire-escape for each end of each corridor or hall above the ground floor. It is recommended that all buildings of more than one story be also protected with a sprinkler system meeting the minimum requirements of the National Board of Fire Underwriters.
- c. All doors shall open outward only, and all outside doors shall be provided, in schools having more than one room, with fire-bolts on the inside.
- d. All basements or cellars shall be so constructed as to be well ventilated and dry.
- e. All future construction shall provide adequate cloak room space, including facilities for the care of wraps, hats and other personal effects.

Section 3.—**School Desks.**—All school desks used in any class room shall be of an adjustable type; or, in lieu thereof, desks of different sizes shall be provided to accommodate children of varying bodily growth.

Section 4.—**Ventilation.**—Class rooms shall at all times when occupied be adequately ventilated through one of the following arrangements:

- a. Through wide-open windows in mild weather.
- b. Through window-board ventilators under other conditions, or
- c. Through special air ducts, inlets or outlets in connection with an adequate steam, hot-water or hot-air heating and ventilating system.
- d. When a jacketed stove is used for heating, the jacket shall be fitted with a direct air inlet not less than twelve (12) inches square, opening through the wall of the building against the middle, or hottest part, of the stove, and a special foul air outlet shall be provided in the base-board on the same side of the room as the stove is located.

- e. All future construction shall provided not less than two hundred forty (240) cubic feet net of free air space for each pupil using any class room.

Section 5.—**Heating.**—Unless an adequate steam, hot-water or hot-air heating sustem is installed in the school building, at least a jacketed stove shall be provided in each class room.

No unjacketed stove shall be permitted in any class room.

Every class room shall be provided with a thermometer, and the temperature of the air, when artificial heating is necessary, shall at all times, when such room is occupied, be kept at not less than sixty-five (65) nor more than seventy (70) degrees (Fahrenheit).

Section 6.—**Lighting.**—Every class room shall be provided with lighting facilities which will permit adequate illumination of all parts of the room on the darkest days.

The net area of clear glass in windows in each class room shall be not less than one-fifth (1/5) of the floor space of the room.

Window shades shall be provided for all windows in class rooms, for the proper control of lighting and the protection of the eyes from a glare of light, and such shades shall permit adjustment from either the top or bottom.

No trees, shrubbery or other obstruction shall be permitted so near any school building as to materially impair the natural lighting of any class room.

Section 7.—**Drinking Water.**—There shall be provided in every school building at all times when such building is occupied, a supply of safe, potable drinking water, ample in quantity for the normal needs of every school child.

Every public school building shall be provided with not less than one sanitary drinking fountain of a type that will not at any time permit the mouth of the individual using the fountain to come in contaet with the spout or faucet from which the water flows; or, in lieu thereof, a closed sanitary jar, taunk or cooler, with a faucet, shall be provided. No bucket or other open container for drinking water shall be used.

No drinking cup, dipper or other utensil which is, or may be, used in common by more than one person shall be provided or permitted in any public school building. A supply of individual sanitary cups may be provided, or pupils may provide their own cups for individual use.

Section 8.—**Lavatory.**—Every public school building shall be supplied where possible with an adequate supply of safe, clean, running water for washing purposes, and provided with sufficient lavatory equipment and supplies, placed, if possible, in a separate lavatory room, convenient and accessible.

No towel which is, or may be, used in common by more than one person, without thorough laundering after each individual use thereof, shall be provided or permitted in any public school building. A supply of individual sanitary towels may be provided, or pupils may provide their own towels for individual use.

Section 9.—**Sewage Disposal.**—All public school buildings, where a sufficient supply of wáter piped under pressure is available, shall be provided with a water-carriage plumbing.

Where there is water-carriage plumbing, separate toilets for girls and boys shall be provided, located if practicable in the school building. Such toilets shall be connected, for disposal of the sewage, with a sewer system approved by the State Commissioner of Health, or with a sewage disposal system built in accordance with general plans approved by said Commissioner.

Where there is no water-carriage plumbing, separate privies for girls and boys shall be provided. Such privies shall be well

ventilated, rain-proof and fly-proof, and shall be constructed in accordance with general plans approved by the State Commissioner of Health.

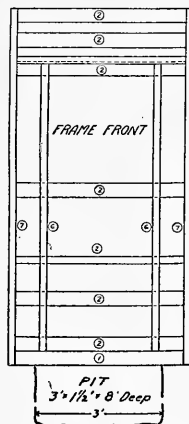
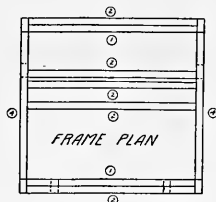
Section 10.—**Cleanliness.**—School buildings, privies and grounds shall at all times be kept in a clean and sanitary condition. Class rooms and halls, cloak rooms, toilet rooms and lavatories shall be cleaned at least once each day.

Floors and furniture shall be cleaned, as far as possible, with dampened or oiled cloths or sweepers, or by vacuum cleaners. No class room shall be swept while such room is occupied.

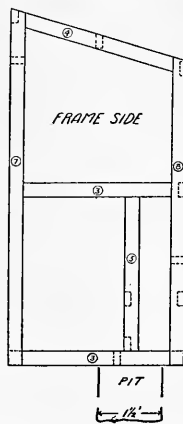
No person shall spit upon the floors or walls of any public school building, nor shall any person throw any waste matter upon the floors or grounds of such building. Suitable and adequate sanitary receptacles for waste matter shall be provided in convenient places.

Whenever any public school building shall be put to any use other than for school purposes, such building so used shall immediately thereafter and before being used for school purposes again, be thoroughly cleaned.

Section 11.—These regulations shall take effect on September 1, 1920, and be in full force and effect on and after that date.



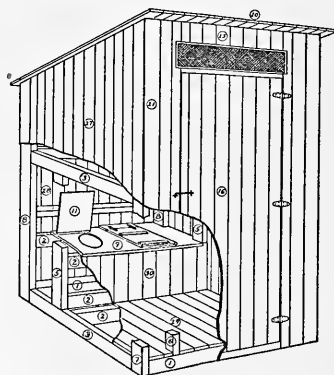
No.	Dimensions	Description
<b>FRAME</b>		
②	4'-6" x 4'-0"	Front and Rear Sills
⑩	2'-6" x 4'-0"	Front, Rear and Side Braces
④	2'-4" x 3'-6"	Side Sills and Braces
②	2'-4" x 3'-10"	Roof Struts
②	2'-6" x 3'-8"	Roof Side Posts
③	2'-6" x 6'-0"	Door Posts
②	2'-6" x 8'-6"	Front Posts
②	2'-6" x 7'-9"	Rear Posts
<b>SEAT</b>		
①	1'-18" x 4'-4"	Two seat rails, 1/2" x 10" x 10" (1/2" thick)
②	1'-3" x 12"	Cover Backing
②	1'-12" x 10"	Covers
④	1'-2" x 10"	Chairs for Covers



### BILL OF MATERIALS

No.	Dimensions	Description
④	2"	Hinges
<b>DOOR</b>		
③	1'-4" x 2'-5"	Horizontal Braces
②	1'-4" x 3'-9"	Diagonal Braces
②	1/2" x 4" x 7'-2"	T. & G.
③	3"	Hinges
①		Latch (inside)
①		Hook and Staples
<b>ROOF</b>		
⑭	1/2" x 4" x 5'-0"	T. & G.
<b>FRONT</b>		
⑥	1/2" x 4" x 8'-6"	T. & G.
②	8" x 2'-8"	14 Sheet copper wire mesh
②	1'-1" x 2'-0"	Cleats

No.	Dimensions	Description
②	1'-1" x 0"	Cleats
②	1/2" x 4" x 7"	T. & G.
①	1' x 2" x 4'-0"	Reinforcing Strip
<b>SIDES</b>		
②	1/2" x 4" x 1'-2"	T. & G.
<b>BACK</b>		
②	1/2" x 4" x 7'-2"	T. & G.
<b>FLOOR</b>		
②	1'-4" x 2'-9"	T. & G.
②	1'-4" x 1'-4"	T. & G.
<b>Notes. Screws</b>		
<b>Paint</b>		
<b>Door Springs</b>		



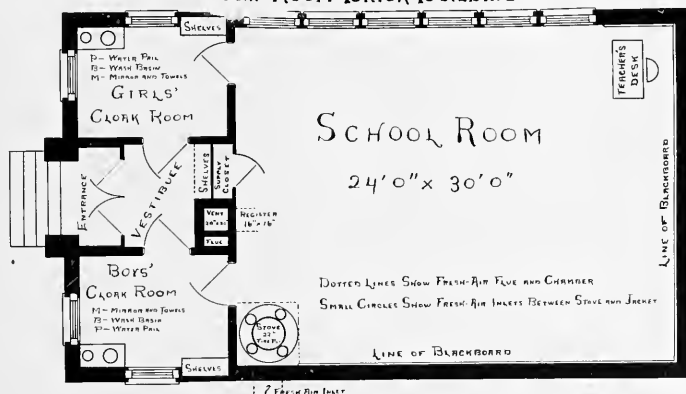
STATE DEPARTMENT OF HEALTH  
SANTA FE, NEW MEXICO  
Division of Sanitary Engineering and Sanitation

FLY-PROOF PIT PRIVY



## DESIGN No. 3

FOR A  
ONE-ROOM BRICK BUILDING



## FLOOR PLAN No. 3

FOR A  
ONE-ROOM BRICK BUILDING

DIMENSIONS (OUTSIDE)—SCHOOL ROOM—25'0" x 31'6" WITH ADDITION IN FRONT FOR VESTIBULE AND TWO CLOAK ROOMS—17'6" x 25'0"

## BILL OF MATERIAL FOR A ONE ROOM BRICK BUILDING.

### Footings—Foundations—Walls—Chimney.

Cement, 15 sacks.  
Brick, 40,000.  
Lime, 10 bbls.  
Sand, 21 yds.  
Broken stone, 4 yds.  
1 Chimney cap.  
4 Screen Wires for air inlets, 24 in. x 24 in.  
2 Stones, 8 in. x 8 in.—6 ft.  
Sill course stone, 10 in.—134 ft. lineal.  
Cap course stone, 6 in.—120 ft. lineal.  
Stone window sills 4 in.—35 ft. lineal.  
Stone window caps 6 in.—35 ft. lineal.

### Framing Timber.

Girts—1 piece, 6 in. x 6 in.—16 ft.  
1 piece, 6 in. x 6 in.—14 ft.  
Floor joists—60 pieces, 2 in. x 10 in.—12 ft.  
Ceiling—30 pieces, 2 in. x 8 in.—24 ft.  
Purlin Plates—2 pieces, 2 in. x 6 in.—16 ft.  
Basement Frames—2 pieces, 2 in. x 8 in.—12 ft.  
Braces and bridging—32 pieces, 1 in. x 6 in.—16 ft.  
60 pieces, 1 in. x 6 in.—12 ft.  
Studding—30 pieces, 2 in. x 6 in.—14 ft.  
Rafters—36 pieces, 2 in. x 6 in.—24 ft.  
Sheeting—Roof, 1,200 ft.  
Rough Floor, 1,200 ft.  
Ventilating flue and chamber—Flooring 50 ft.

### Exterior Finishing Work.

Steps made of cement.  
8 squares of 5-ply tar and gravel roof.  
Windows—10 windows 30 in. x 48 in.—2 lights.  
1 transom 60 in. x 16 in.—1 light.  
Doors—2 sash doors, 2 ft. 6 in. x 7 ft.

### Interior Finishing Work.

Flooring, 1,200 ft.  
Base, 220 ft.  
Quarter round, 220 ft.  
4 panel doors 3 ft. x 7 ft.  
1 panel door 2 ft. 6 in. x 6 ft. 6 in.

Shelving, 3 pieces 1 in. x 12 in.—16 ft.

Door and window frames casing—1 piece, 2 in. x 6 in.—20 ft.  
8 pieces, 1 in. x 6 in.—10 ft.  
29 pieces, 1 in. x 5 in.—18 ft.  
4 pieces, 1 in. x 5 in.—16 ft.  
20 pieces, 1 in. x 5 in.—14 ft.

Parting stop, 190 ft.  
Parting stop mould, 190 ft.  
Stool, 38 ft.  
Brick mould, 130 ft.  
32 Base Blocks, 1½ in. x 12 in.  
Hook strips, 1 in. x 4 in.—100 ft.  
Chalk troughs, 72 ft.  
Cap mould, 72 ft.  
Panel mould, 72 ft.

### Lath and Plaster.

Lath, 3,900.  
Plaster, 47 sacks.  
Sand, 10 yds.

### Hardware.

1 front door lock.  
4 mortise locks.  
1 rimlock.  
1 transom lift.  
500 lbs. window weights.  
200 ft. sash cord.  
10 window locks and lifts.  
9 pairs, 4 in. x 4 in. door butts.  
1 pair 3½ in. x 3½ in. door butts.  
5 door bumpers.  
40 pulleys.  
4 dozen cloak hooks.  
1 flue thimble.  
1 register, 20 in. x 20 in.

Nails—50 lbs. 20 ds. common.  
150 lbs. 10 ds. common.  
50 lbs. 16 ds. common.  
100 lbs. 8 ds. flooring.  
18 lbs. 3 ds. lath.  
10 lbs. 10 ds. casing.  
10 lbs. 8 ds. casing.  
5 lbs. 6 ds. casing.  
4 lbs. 4 ds. casing.  
2 lbs. 3 ds. casing.





# **BILL OF MATERIAL FOR A TWO ROOM BRICK SCHOOL HOUSE.**

## **Footings—Foundations—Walls—Chimney.**

Cement, 25 sacks.  
 Brick, 68,000.  
 Lime, 68 bbls.  
 Sand, 31 yds.  
 Broken stone, 7 yds.  
 2 Chimney caps.  
 4 Screen Wires for air inlets, 24 in. x 24 in.  
 4 Stones, 8 in. x 8 in.—6 ft.  
 10 in. Stone Sill Course—182 ft. lineal.  
 Stone cap courses, 6 in. x 153 ft. lineal.  
 4 in. stone window sills, 67 ft. lineal.  
 6 in. stone window caps, 67 ft. lineal.

## **Framing Timber.**

Girts—2 pieces, 6 in. x 6 in.—16 ft.  
           2 pieces, 6 in. x 6 in.—14 ft.  
 Floor joists— 120 pieces, 2 in. x 10 in.—12 ft.  
 Ceiling joists— 60 pieces, 2 in. x 8 in.—24 ft.  
                   4 pieces, 2 in. x 6 in.—16 ft.  
 Basement frames—4 pieces, 2 in. x 8 in.—12 ft.  
 Braces and bridging— 64 pieces, 12 in. x 6 in.—16 ft.  
                                   120 pieces, 1 in. x 6 in.—12 ft.  
 Studding— 63 pieces, 2 in. x 4 in.—14 ft.  
 Rafters — 70 pieces, 2 in. x 6 in.—24 ft.  
           20 pieces, 2 in. x 4 in.—16 ft.  
 Plates—1 piece, 2 in. x 8 in.—16 ft.  
           1 piece, 2 in. x 8 in.—14 ft.  
 Sheeting roof, 2,400 ft.  
 Rough floor, 2,400 ft.  
 Ventilating flue and chamber, flooring, 288 ft.

## **Exterior Finishing Work.**

Steps of cement.  
 18 squares of 6-ply tar and gravel roof.  
 Windows—18 windows, 30 in. x 48 in.—2 lights.  
           1 sash . . . 30 in. x 48 in.—1 light.  
           2 transoms 10 in. x 16 in.—1 light.  
 Doors—4 sash doors, 2 ft. 6 in. x 7 ft.

## **Interior Finishing Work.**

Flooring, 2,400 ft. lineal.  
 Base, 449 ft. lineal.  
 Quarter round, 440 ft. lineal.  
 8 panel doors, 3 ft. x 7 ft.  
 2 panel doors, 2 ft. 6 in. x 6 ft. 5 in.  
 Shelving, 6 pieces, 1 in. x 12 in.—16 ft.

Door and window frames and casing— 2 pieces, 2 in. x 6 in.—20 ft.  
           14 pieces, 1 in. x 6 in.—14 ft.  
           1 piece, 1 in. x 6 in.—10 ft.  
           57 pieces, 1 in. x 5 in.—18 ft.  
           9 pieces, 1 in. x 5 in.—16 ft.  
           41 pieces, 1 in. x 5 in.—14 ft.

Parting stop, 383 ft. lineal.  
 Parting stop mould, 283 ft. lineal.  
 Stool, 76 ft. lineal.  
 Window casing, 240 ft. lineal.  
 Brick mould, 260 ft. lineal.  
 8 Corner beads, 5 ft. lineal.  
 54 Base blocks, 1½ in. v 12 in.  
 Hook strips, 1 in x 4 in.—160 ft.  
 Chalk troughs, 144 ft.  
 Cap mould, 144 ft.  
 Panel mould, 144 ft.

## **Lath and Plaster.**

Lath, 7,500.  
 Plaster, 85 sacks.  
 Sand, 20 yds.

## **Hardware.**

Heavy wire screen for coat rack—6 ft. x 18 ft.  
 2 front door locks.  
 8 mortise locks.  
 2 rimlocks.  
 2 transom lifts.  
 1,000 lbs. window weights.  
 400 ft. sash cord.  
 18 window locks and lifts.  
 21 pairs 4 in. x 4 in.—door butts.  
           2 pairs 3½ in. x 3½ in.—door butts.  
 10 door bumpers.  
 72 pulleys.  
 8 dozen cloak hooks.  
 2 fine thimbles.  
 2 registers, 20 in. x 20 in.  
 Nails—109 lbs. 20 ds. common.  
           100 lbs. 16 ds. common.  
           300 lbs. 10 ds. common.  
           200 lbs. 8 ds. flooring.  
           30 lbs. 3 ds. lath.  
           20 lbs. 10 ds. casing.  
           20 lbs. 8 ds. lath.  
           10 lbs. 6 ds. lath.  
           8 lbs. 4 ds. lath.  
           4 lbs. 3 ds. lath.



# **BILL OF MATERIAL FOR A TWO ROOM ADOBE BUILDING.**

## **Footings—Foundations—Walls—Chimney.**

Cement, 28 bbls.  
Brick, 7,000.  
Adobes, 17,000.  
Lime, 70 bbls.  
Sand, 56 yds.  
Broken stone, 20 yds.  
4 Screens for air inlets, 24 in. x 24 in.  
2 Stone chimney caps.  
2 Stone sills, 7 ft.  
16 Stone sills, 3 ft. 6 in.

## **Framing Timber.**

Girts—2 pieces, 6 in. x 6 in.—16 ft.  
2 pieces, 6 in. x 6 in.—14 ft.  
Floor Joists—8 pieces, 2 in. x 10 in.—16 ft.  
96 pieces, 2 in. x 10 in.—12 ft.  
30 pieces, 2 in. x 10 in.—10 ft.  
Ceiling Joists—48 pieces, 2 in. x 8 in.—26 ft.  
8 pieces, 2 in. x 8 in.—12 ft.  
30 pieces, 2 in. x 8 in.—10 ft.  
Closet Studding—12 pieces, 2 in. x 4 in.—16 ft.  
Plates—9 pieces, 2 in. x 8 in.—16 ft.  
9 pieces, 2 in. x 8 in.—14 ft.  
8 pieces, 2 in. x 8 in.—14 ft.  
Rafters—14 pieces, 2 in. x 6 in.—24 ft.  
17 pieces, 2 in. x 4 in.—18 ft.  
60 pieces, 2 in. x 4 in.—16 ft.  
Bridging, 12 pieces, 1 in. x 6 in.—16 ft.  
Sheeting, roof, 3,200 ft.  
Rough floor, 2,700 ft.  
Shingles, 23,000.  
Ventilating flues and chambers, flooring, 180 ft.  
Steps made of cement.  
Windows—14 windows, 30 in. x 36 in.—2 lights.  
2 sash, - - - 30 in. x 36 in.—1 light.  
2 sash, - - - 62 in. x 42 in.—1 light.  
16 transom windows, 24 in. x 22 in.—3 lights.  
1 transom window, 66 in. x 22 in.—6 lights.  
Doors, 2 front doors, sash 2 ft. 6 in. x 7 ft.

## **Interior Finish.**

Flooring, 2,700 ft.  
Base, 360 ft.  
Quarter round, 360 ft.  
Doors—2 sash, 2 ft. 6 in. x 7 ft.; 4 panel, 3 ft. x 7 ft.; 6 panel, 2 ft. 6 in. x 6 ft. 6 in.  
Shelving—6 pieces, 1 in. x 12 in.—16 ft.

## **Door and Window Frames.**

Jams—3 pieces, 1 in. x 5 in.—12 ft.  
48 pieces, 1 in. x 5 in.—18 ft.

Headers—3 pieces, 1 in. x 5 in.—16 ft.  
2 pieces, 1½ in. x 6 in.—18 ft.  
1 piece, 1½ in. x 6 in.—10 ft.  
4 pieces, 1½ in. x 6 in.—14 ft.  
1 piece, 1½ in. x 6 in.—12 ft.  
4 pieces, 1 in. x 6 in.—14 ft.  
1 piece, 1 in. x 6 in.—12 ft.

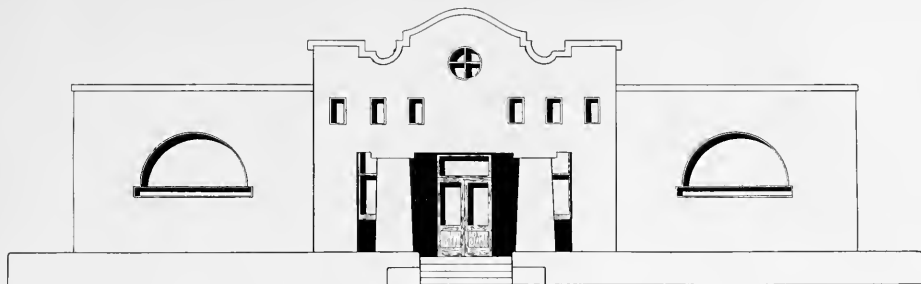
Door casing, 300 ft.  
Window casing, 840 ft.  
Closet casing, 100 ft.  
Hook strips, 200 ft.  
Chalk troughs, 144 ft.  
Cap mould, 144 ft.  
Panel mould, 144 ft.  
Stop, 430 ft.  
Mould, 430 ft.  
Stool, 200 ft.

## **Lath and Plaster.**

3,720 lath.  
53 sacks of plaster.  
Cement for outside walls.  
21 loads of sand.

## **Hardware.**

2 registers, 20 in. x 20 in.  
2 flue thimbles.  
1 front door lock.  
4 mortise locks.  
6 rimlocks.  
72 sash pulleys.  
18 sash locks and lifts.  
720 lbs. sash weights.  
360 ft. sash cord.  
8 dozen cloak hooks.  
16 transom lifts.  
Nails—190 lbs. 20 ds. common.  
100 lbs. 16 ds. common.  
200 lbs. 10 ds. common.  
200 lbs. 8 ds. flooring.  
25 lbs. 3 ds. lath.  
2 lbs. 1½ ds. brads.  
20 lbs. 10 ds. casing.  
20 lbs. 8 ds. casing.  
10 lbs. 6 ds. casing.  
8 lbs. 4 ds. casing.  
4 lbs. 3 ds. casing.  
Door butts—6 pairs of 3 in. x 2 in. door butts.  
4 pairs of 3½ in. x 3½ in. door butts.  
6 pairs of 4 in. x 4 in. door butts.  
14 pairs of 2½ in. x 4 in. transom butts.  
36 sheets of No. 1 sand paper.  
2 pieces of heavy wire screen for cloak rooms, 6 ft. x 8 ft.



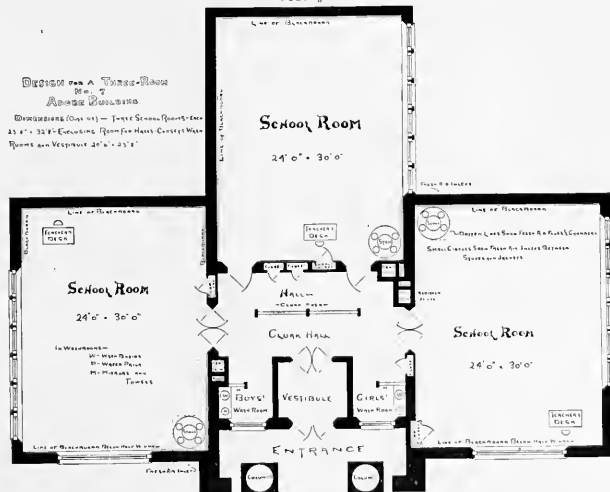
**FRONT ELEVATION --- THREE ROOM ADOBE BUILDING**

No. 7

DESIGN FOR A THREE-ROOM

No. 7  
Acute Bulbix

Dimensions (Ours 03) - Four Storage Rooms - Each  
23' 0" x 32' 0" - Existing Room for Halls - Corridor Walk  
Rooms are Vertical 20' 0" x 25' 0"



### SCHOOL ROOM

24' 0" - 30' 0"

in Watsonian =

$W = W_{\text{gen}} \cdot P_{\text{gen}} \cdot P_{\text{gen}}$   
 $P = W_{\text{gen}} \cdot P_{\text{gen}} \cdot P_{\text{gen}}$   
 $P = P_{\text{gen}} \cdot P_{\text{gen}} \cdot P_{\text{gen}}$   
 $T =$

### School Room

24° 0', 30° 0'

ENTRANCE

# **BILL OF MATERIAL FOR A THREE ROOM ADOBE BUILDING.**

## **Footings—Foundations—Wall—Chimney.**

Cement, 32 bbls.  
 Brick, 10,650.  
 Lime, 100 bbls.  
 Sand, 78 yds.  
 Adobes, 23,000.  
 Broken rock, 27 yds.  
 6 pieces screen wire for fresh air inlet, 24 in. x 24 in.  
 3 stone chimney caps.  
 18 stone sills, 3 ft. 6 in.  
 2 stone sills, 11 ft. 6 in.  
 2 stone sills, 4 ft. 6 in.

## **Framing Timber.**

Girts—2 pieces, 6 in. x 6 in.—16 ft.  
 3 pieces, 6 in. x 6 in.—14 ft.  
 1 piece, 6 in. x 6 in.—12 ft.  
 1 piece, 6 in. x 6 in.—10 ft.  
 Flooring joists—56 pieces, 2 in. x 19 in.—12 ft.  
 Ceiling joists —78 pieces, 2 in. x 8 in.—24 ft.  
 Closet studding, 12 pieces, 2 in. x 4 in.—16 ft.  
 Plates—4 pieces, 2 in. x 6 in.—16 ft.  
 4 pieces, 2 in. x 6 in.—14 ft.  
 1 piece, 2 in. x 6 in.—12 ft.  
 Rafters—97 pieces, 2 in. x 6 in.—24 ft.  
 4 pieces, 2 in. x 4 in.—16 ft.  
 4 pieces, 2 in. x 4 in.—14 ft.  
 25 pieces, 2 in. x 4 in.—12 ft.  
 3 pieces, 2 in. x 8 in.—12 ft.  
 Bridging and braces—96 pieces, 1 in. x 6 in.—16 ft.  
 156 pieces, 1 in. x 6 in.—12 ft.  
 Sheeting, roof, 3,200 ft.  
 Rough floor, 3,200 ft.  
 Ventilating flues and chambers, flooring, 200 ft.  
 27 squares of 5-ply tar and gravel roof.  
 Steps of cement.  
 Windows—18 windows, 30 in. x 36 in.—2 lights.  
 2 windows, 42 in. x 42 in.—2 lights.  
 6 sash - - - 18 in. x 30 in.—1 light.  
 18 transoms, 34 in. x 22 in.—3 lights  
 1 transom, 5 ft. x 2 ft.  
 2 half circle windows, 10 ft. diameter.—1 light.  
 1 circle window, - - - 3 ft. diameter.—4 lights.  
 Doors—2 sash doors, 2 ft. 6 in. x 7 ft. 0 in.

## **Interior Finish.**

Flooring, 3,200 ft.  
 Base, 450 in.  
 Quarter round, 450 ft.  
 Doors—2 sash doors, 2 ft. 6 in. x 7 ft. 0 in.  
 4 panel doors, 2 ft. 6 in. x 7 ft. 0 in.

2 panel doors, 3 ft. x 7 ft.  
 6 panel doors, 2 ft. 6 in. x 6 ft. 6 in.  
 Shelving, 6 pieces, 1 in. x 12 in.—16 ft.  
 Door and window frames and casings— 4 pieces, 2 in. x 6 in.—20 ft.  
 8 pieces, 2 in. x 6 in.—16 ft.  
 1 piece, 1 in. x 5 in.—20 ft.  
 57 pieces, 1 in. x 5 in.—18 ft.  
 8 pieces, 1 in. x 5 in.—16 ft.  
 2 pieces, 1 in. x 5 in.—14 ft.  
 3 pieces, 1 in. x 5 in.—10 ft.  
 20 pieces, 1 in. x 4 in.—18 ft.

2 cement door sills, 6 in. x 8 in.—6 ft.  
 Stop mould, 533 ft. lineal.  
 Parting stop, 382 ft. lineal.  
 Chalk rail, 216 ft. lineal.  
 Panel mould, 216 ft. lineal.  
 Cap mould, 216 ft. lineal.

## **Lath and Plaster.**

Lath, 4,590.  
 Plaster, 100 sacks.  
 Cement for outside walls, 80 sacks.  
 Sand, 32 yds.

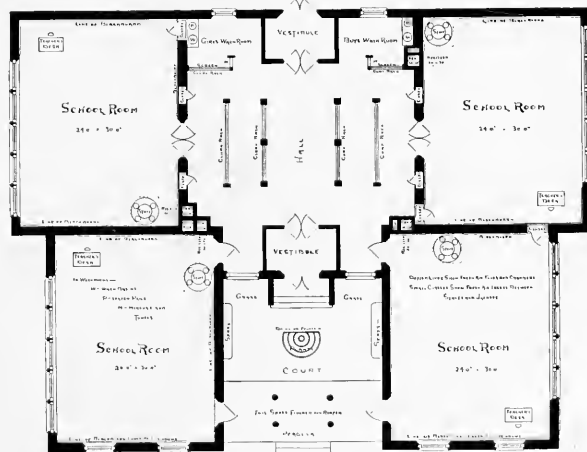
## **Hardware.**

3 registers, 20 in. x 20 in.  
 3 flue thimbles.  
 1 front door lock.  
 4 mortise locks.  
 6 rimlocks.  
 14 pairs, 4 in. x 4 in. door butts.  
 6 pairs, 3½ in. x 3½ in. door butts.  
 18 pairs, transom hinges.  
 18 transom lifts.  
 80 sash pulleys.  
 20 locks and lifts.  
 800 lbs. sash weights.  
 490 ft. sash cord.  
 12 dozen coat and hat hooks.  
 36 sheets No. 1 sand paper.  
 Heavy wire screen for cloak racks, 6 ft. x 20 ft.  
 Nails—150 lbs. 20 ds. common.  
 150 lbs. 16 ds. common.  
 150 lbs. 12 ds. common.  
 400 lbs. 10 ds. common.  
 300 lbs. 8 ds. common.  
 35 lbs. 10 ds. casing.  
 30 lbs. 8 ds. casing.  
 15 lbs. 6 ds. casing.  
 8 lbs. 4 ds. casing.  
 4 lbs. 3 ds. casing.  
 25 lbs. 19 ds. finishing.  
 25 lbs. 8 ds. finishing.  
 35 lbs. 3 ds. lath.  
 2 lbs. 1¼ ds. brads.



FRONT ELEVATION FOR A FOUR-STORY SCHOOL BUILDING

No. 3



FIRST FLOOR — FOUR-STORY BUILDING  
 DIMENSIONS (Overall) — First School Room Type 34' 0" x 34' 0" and Second School Room Type 34' 0" x 34' 0" and Entrance and Corridor 34' 0" x 34' 0"

No. 3

# FILL OF MATERIAL FOR A FOUR ROOM ADOBE SCHOOL BUILDING.

## Footings—Foundation— Walls—Chimney.

Cement, 50 bbls.  
Brick, 11,650.  
Adobes, 32,000.  
Lime, 140 bbls.  
Sand, 112 yds.  
Broken stone, 22 yds.  
8 screen wires for fresh air inlets, 24 in. x 24 in.  
4 stone chimney caps.

## Framing Timber.

Girts—4 pieces, 6 in. x 6 in.—20 ft.  
5 pieces, 6 in. x 6 in.—16 ft.  
4 pieces, 9 in. x 6 in.—14 ft.  
Floor joists—281 pieces, 2 in. x 10 in.—12 ft.  
Upper girts—4 pieces, 6 in. x 6 in.—12 ft.  
Ceiling joists—96 pieces, 2 in. x 8 in.—24 ft.  
97 pieces, 2 in. x 8 in.—12 ft.  
Closet studding—48 pieces, 2 in. x 4 in.—14 ft.  
Rafters—96 pieces, 2 in. x 6 in.—24 ft.  
97 pieces, 2 in. x 6 in.—12 ft.  
Posts—24 pieces, 2 in. x 4 in.—16 ft.  
24 pieces, 2 in. x 6 in.—12 ft.  
4 pieces, 2 in. x 6 in.—16 ft.  
Braces, bridging, 96 pieces, 1 in. x 6 in.—12 ft.  
Sheeting, roof, 5,000 ft.  
Rough floor, 5,000 ft.  
Ventilation flue and chamber, flooring, 400 ft.  
30 squares of 5-ply tar and gravel roof.  
Steps are made of cement.  
Windows—24 windows, 12 in. x 24 in.—12 lights.  
4 sash, - - - 12 in. x 24 in.—6 lights.  
1 half circle sash, 5 ft. in diameter—8 lights.  
Doors—4 sash doors, 2 ft. 6 in. x 7 ft.  
Lookouts—13 pieces, 4 in. x 6 in.—14 ft.  
Plancie—1 in. x 12 in.—390 ft. lineal.  
Facie—1 in. x 10 in.—108 ft. lineal.  
9 corner beads, 5 ft. long.

## Interior Finishing Work.

Flooring, 5,000 ft.  
Base, 700 ft.  
Quarter round, 700 ft.  
Doors—4 sash doors, 2 ft. 6 in. x 7 ft. 0 in.  
4 panel doors, 2 ft. 6 in. x 7 ft. 0 in.

4 panel doors, 3 ft. x 7 ft.

8 panel doors, 2 ft. 6 in. x 7 ft.

8 pieces, 1 in. x 6 in.—14 ft.  
Door and window frames— 4 pieces, 2 in. x 8 in.—12 ft.  
4 pieces, 2 in. x 6 in.—16 ft.  
24 pieces, 2 in. x 6 in.—14 ft.  
1 piece, 1 in. x 5 in.—16 ft.  
80 pieces, 1 in. x 5 in.—14 ft.  
22 pieces, 1 in. x 5 in.—14 ft.

Inside casing, 450 ft.  
Parting stop, 508 ft.  
Window stop mould, 572 ft.  
Shelving, 10 pieces, 1 in. x 12 in.—16 ft.  
Hook strips, 320 ft.  
Chalk troughs, 288 ft.  
Cap mould, 288 ft.  
Panel mould, 288 ft.

## Lath and Plaster.

Lath, 8,000.  
Plaster, 212 sacks.  
Cement for outside walls, 106 sacks.  
Sand, 68 yds.

## Hardware.

Nails—290 lbs. 20 ds. common.  
200 lbs. 16 ds. common.  
200 lbs. 10 ds. common.  
200 lbs. 8 ds. flooring.  
75 lbs. 3 ds. lath.  
30 lbs. 10 ds. finishing.  
30 lbs. 8 ds. finishing.  
15 lbs. 6 ds. finishing.  
10 lbs. 4 ds. finishing.  
10 lbs. 4 ds. finishing.  
5 lbs. 3 ds. finishing.  
4 registers, 20 in. x 20 in.  
4 flue thimbles, 6 in.  
4 front door locks.  
8 mortise locks.  
8 rimlocks.  
12 pairs of door butts, 4 in. x 4 in.  
16 pairs of door butts, 3½ in. x 3½ in.  
96 sash pulleys.  
24 sash locks and lifts.  
1,000 lbs. sash weights.  
500 ft. sash cord.  
200 cloak hooks.  
2,500 ft. tin roof.  
4 heavy wire screens for cloak racks, 6 ft. x 12 ft.





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